

(19) World Intellectual Property  
Organization  
International Bureau



(43) International Publication Date  
7 July 2005 (07.07.2005)

PCT

(10) International Publication Number  
**WO 2005/061983 A1**

(51) International Patent Classification<sup>7</sup>: **F41A 33/02**  
(21) International Application Number:  
PCT/KR2004/003311

(22) International Filing Date:  
15 December 2004 (15.12.2004)

(25) Filing Language: Korean

(26) Publication Language: English

(30) Priority Data:  
10-2003-0091035 15 December 2003 (15.12.2003) KR  
10-2004-0000750 6 January 2004 (06.01.2004) KR

(71) Applicant (for all designated States except US): **HANRIM SCIENCE & TECHNOLOGY** [KR/KR]; Hantong B/D 10F, 16-60 Hangangro3-ga, Yongsan-ku, Seoul 140-013 (KR).

(72) Inventor; and

(75) Inventor/Applicant (for US only): **NAMGUNG, Balentino** [KR/KR]; 1001-102 Jugong Apt., 1120 Sanbon-dong Gunpo-si, Gyeonggi-do 435-040 (KR).

(74) Agent: **PARK, Hyun-cheol**; 4F, Shinwon Bldg., 648-15, Yeoksam-dong, Kangnam-ku, Seoul 135-080 (KR).

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

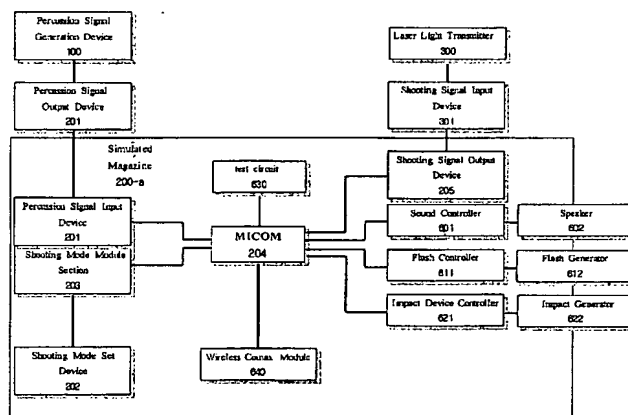
(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

**Published:**

- with international search report
- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments

[Continued on next page]

(54) Title: A STRUCTURE OF DETECTING DEVICE USED IN MILES SYSTEM AND GUN SIMULATOR



(57) Abstract: Disclosed is a detecting device for hit determination by detecting a light shot from a transmitter. The detecting device according to the invention comprises a plurality of detecting elements. Each detecting element includes an optical detector cell of a planar shape for generating an electric signal when detecting a light, a protection case of a cylindrical shape for supporting the optical detector cell housed inside thereof a set of lead wires, each of which being electrically connected to an anode electrode and a cathode electrode of the optical detector cell for supplying the electric signal generated from the optical detector cell to hit determination means, and a protection shield located on a front light detecting surface of the optical detector cell for protecting the optical detector cell from external environment and passing the light. The protection case of a cylindrical shape has an open front surface. The optical detector cell of a planar shape has a light detecting front surface adjacent to the open front surface of the protection case, and a rear surface supported by a packing material packed inside of the protection case. The set of lead wires is elongated from the rear surface of the optical detector cell and protected by the packing material.

WO 2005/061983 A1

**WO 2005/061983 A1**

---



*For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*